Stat and Data Analysis Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Tossing Thumbtacks**

Purpose: Find the probability of a tack landing point up when dropped.

Instructions:

1. Get a cup with 5 thumbtacks
2. First make a guess as to the proportion of times you think that the thumbtack would land point up.

*p* = \_\_\_\_\_

1. Toss the thumbtacks onto the desk and record if it was point up (U) or point down (D). Record 50 tosses (10 flips of the cup).

|  |  |  |
| --- | --- | --- |
| Result | Point Up (U) | Point Down (D) |
| Tally |  |  |
| Total Counts |  |  |

1. Total up the number of times it was point up and the number of times it was point down.
2. Divide the number of times it landed ***point up*** by the total number of tosses (50).



1. How close was your guess?
2. Is this the true proportion? Explain.
3. On the board put your proportion with the rest of the class’s proportions.
4. Did everyone in the class get the same proportion?
5. Why might people’s proportions differ?
6. Put the class data into your calculator and create a histogram. (XMIN = 0, XMAX = 1, XSCL = 0.05 or 0.10)
7. Find the summary statistics of the class sample proportions.

Mean = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ n = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

S = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Min = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q1 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Med = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q3 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Max = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

IQR = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Describe the histogram for the class sample proportions. (Shape, Center Spread)
2. Do you think the mean is the true proportion? Explain.
3. What might you need to do to get a more accurate estimation of the true proportion of landing heads up?